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ABSTRACT

This study was conducted to evaluate whether the adjectival self-description checklist may provide a viable method of quickly obtaining initial personality type information. The Personal Preferences Self-Description Questionnaire (PPDSQ) was administered to more than 420 college students, and data were analyzed using classical reliability analysis and both exploratory and LISREL confirmatory factor analyses. Students also took the Myers Briggs Type Indicator (MBTI). Results generally supported a conclusion that PPSDQ scores are reasonably reliable and valid. Thirteen tables and two figures present details of the statistical analyses. An appendix presents some descriptive MBTI statistics. (Contains 21 references.) (Author/SLD)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

AN ADJECTIVAL SELF-DESCRIPTION CHECKLIST EVALUATING MYERS-BRIGGS TYPE INDICATOR (MBTI) TYPES: CONCURRENT AND CONSTRUCT SCORE VALIDITY

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Abstract

The study was conducted to evaluate whether the adjectival self-description checklist may provide a viable method of quickly obtaining initial personality type information. The Personal Preferences Self-Description Questionnaire (PPDSQ) was administered to more than 420 college students, and data were analyzed using classical reliability analysis and both exploratory and LISREL confirmatory factor analyses. Results generally supported a conclusion that PPSDQ scores are reasonably reliable and valid.

The Myers-Briggs Type Indicator (MBTI) is one of the most frequently used measures of personality, as noted in various reviews (cf. Thompson & Ackerman, 1994). This has been the case for at least two reasons. First, unlike many personality measures, the MBTI focuses on normal variations in personality, and because more people have normal as against abnormal personality, the measure may be useful with more people than measures of psychopathology would be. Second, many counselors find that the MBTI has enormous "face validity" for clients, i.e., that clients understand the concepts implicit in the measure, tend to agree with important aspects of type characterizations, and find the information to be useful, free of value judgments, and non-threatening.

McCaulley (1990) provides a concise and informed overview of the MBTI, its history, and its uses. The forms of the MBTI were developed over at least four decades. Initial work was done by Katherine C. Briggs and her daughter, Isabel Briggs Myers. Mary H. McCaulley also made numerous contributions, and worked closely with Isabel in projects such as the writing of the comprehensive MBTI manual (Myers & McCaulley, 1985), which was published subsequent to Myers' death in May, 1980.

The MBTI was developed with some grounding in the basic precepts of Carl G. Jung's theory of psychological functions and types. The theory presumes that "...much of the seemingly random variation in behavior is actually quite orderly and consistent, being due to basic differences in the way individuals prefer to use

their perception and judgment" (Myers & McCaulley, 1985, p. 1).

The MBTI is designed to measure four dimensions: Extraversion-Introversion, Sensation-iNtuition, Thinking-Feeling, and Judgment-Perception. In conventional usage, continuous scores are computed on each dimension for each preference pole of the dimension (e.g., both Extraversion and Introversion on the EI dimension), and persons are "typed" based on which style within each dimension is preferred. Each individual is then classified into one of the 16 types formed from all possible combinations of the four scales, e.g., ENTJ, ISTP, and ENFP.

Unlike the other three dimensions, the JP construct is *implicit* (rather than explicit) within Jung's theory. Theoretically, people do have a general rank-order preference for the four mental processes or functions of Sensing, iNtuition, Thinking, and Feeling. Myers reasoned that JP scores--when taken together with EI scores--would point to a person's dominant, auxiliary, tertiary, and inferior functions (see McCaulley, 1990; Myers & McCaulley, 1985).

Persons with a preference for Judging most show the world in their public persona or public face either Thinking or Feeling, depending upon their preferences on the TF scale. Persons with a preference for Perceiving have either Sensing or iNtuition as the main function in their public persona. Persons with a preference for Extraversion show the world their dominant function as part of their public persona, while persons with a preference for Introversion show the world their second-most prefered function,

i.e., their auxiliary. Thus, INTJ's show the world most often a preference for Thinking, but actually their most-prefered function--their dominant--is iNtuition. ENTJ's, on the other hand, most show the world Thinking, and Thinking is actually the dominant for the extraverted ENTJ's.

MBTI items are forced-choice in nature and consist of paired statements, one from either preference pole on one of the four scales. The MBTI was designed for use with older adolescents and adults in the normal population. Most forms of the measure have roughly 100 scored items. Previous factor analytic investigations of MBTI data have generally been supportive of a conclusion that the instrument yields scores measuring the intended constructs (e.g., Thompson & Borrello, 1986).

A pair of studies reported in the Manual (Myers & McCaulley, 1985) by Carskadon used *self-estimate* of type as a validity measure. When subjects were asked to choose the type description that best suited them, their actual MBTI-tested type was chosen to a statistically significant degree more often than other types.

These studies prompted us to explore the utility of a short-form measure of type preferences developed by Thompson (1994); this measure is an adjectival *self-description* checklist--the Personal Preferences Self-Description Questionnaire (PPDSQ). The MBTI itself includes several items involving adjectival self-description and this, taken with the previous research involving self-estimation of type, together suggest that adjectival self-description may provide a sufficient basis with which to

tentatively identify type.

The purpose of our present study was to explore the reliability of PPSDQ scores, the concurrent validity of PPSDQ scores in relation to MBTI continuous scores, and the construct validity of PPSDQ scores. The study was conducted as a second step in an iterative sequence of PPSDQ test revisions and refinements, building on the previous work reported by Thompson and Stone (1994).

Method

Subjects

We administered MBTI Form G and the PPDSQ self-descriptive adjectival checklist to 420 college students enrolled in a private university located in the southern United States in an urban setting. There were more females (n_1=273; 65.0%) than males (n_2=147; 35.0%) in our sample. The mean age of the sample was 23.82 (*SD*=9.58).

Instrumentation

The PPDSQ (Thompson, 1994) consists of 59 scored adjective-pairs posited to mark each of the four dimensions of personality measured by the MBTI. Roughly half the PPSDQ items measuring each of the four constructs were reversed so as to minimize response set. For example, item 1 ("Quiet-Expressive") measures *EI*, but the *I*ntroversion adjective ("Quiet") is presented first within the pair. Item 6 ("Social-Private") also measures *EI*, but the *E*xtraversion adjective ("Social") is presented first within this adjective pair.

Each adjective pair is presented as a semantic differential scale. A Likert scale ("1" to "7") is presented between each pair of adjectives, and subjects circle the number that represents which adjective best describes them. Thus, unlike the MBTI which uses an "ipsative" or forced-choice response format, the PPDSQ uses a "normative" or non-forced-choice response format.

Results

Presumptions Underlying Analytic Choices

In the present study the primary analyses involved classical reliability statistics and principal components analyses. Prior to elaborating these results, some discussion of the presumptions underlying our major analytic methods seems warranted.

The Nature of Reliability. Unlike many researchers, we consciously recognized that *reliability is a characteristic of scores or data in hand, and generally ought to be investigated for every given data set*. Many authors present this view, but paradigm influences constrain some researchers from integrating this presumption into their actual analytic practice (Thompson, in press).

For example, Rowley (1976, p. 53, emphasis added) noted that, "It needs to be established that an instrument itself is neither reliable nor unreliable.... A single instrument can produce *scores* which are reliable, and other *scores* which are unreliable." And Crocker and Algina (1986, p. 144, emphasis added) argued that, "...A test is not 'reliable' or 'unreliable.' Rather, reliability is a property of the *scores* on a test for a *particular* group of

examinees."

In another widely respected text, Gronlund and Linn (1990, p. 78, emphasis in original) correctly noted,

> Reliability refers to the *results* obtained with an evaluation instrument and not to the instrument itself.... Thus, it is more appropriate to speak of the reliability of the "test scores" or of the "measurement" than of the "test" or the "instrument."

And Eason (1991, p. 84, emphasis added) argued that:

> Though some practitioners of the classical measurement paradigm [incorrectly] speak of reliability as a characteristic of tests, in fact reliability is a characteristic of *data*, albeit data generated on a given measure administered with a given protocol to given subjects on given occasions.

The sample itself impacts the reliability of scores. Reliability is driven by variance--typically greater scores variance leads to greater score reliability, and so more *heterogeneous* samples often lead to more *variable* scores, and thus to higher reliability. If the test could be reliable, score reliability would logically not be influenced by to whom the test was administered. Obviously, this is <u>not</u> the case!

The same measure, when administered to more heterogenous or more homogeneous sets of subjects, will yield scores with differing reliability. As Dawes (1987, p. 486) observed, "...Because

reliability is a function of sample as well as of instrument, it should be evaluated on a sample from the intended target population--an obvious but sometimes overlooked point."

Our shorthand ways of speaking (e.g., language saying "the test is reliable") can itself cause confusion and lead to bad practice. As Pedhazur and Schmelkin (1991, p. 82, emphasis in original) observed, "Statements about *the* reliability of a measure are... inappropriate and potentially misleading." These telegraphic ways of speaking can be problematic, if we come unconsciously to ascribe truth to our literal shorthand, rather than recognize that our jargon is sometimes telegraphic and not literally true. As Thompson (1992, p. 436) emphasizes:

> This is not just an issue of sloppy speaking--the problem is that sometimes we unconsciously come to think what we say or what we hear, so that sloppy speaking does sometimes lead to a more pernicious outcome, sloppy thinking and sloppy practice.

The Utility of Principal Components Analyses for Informing Judgments Regarding Construct Validity. With respect to using factor analysis to help judge score *validity*, many researchers acknowledge the prominent role that factor analysis can play in efforts to establish construct validity. For example, Nunnally (1978, p. 111) noted that, historically, "construct validity has been spoken of as [both] 'trait validity' and 'factorial validity.'"

Similarly, Gorsuch (1983, p. 350) noted that, "A prime use of

factor analysis has been in the development of both the operational constructs for an area and the operational representatives for the theoretical constructs." In short, "factor analysis is intimately involved with questions of validity.... Factor analysis is at the heart of the measurement of psychological constructs" (Nunnally, 1978, pp. 112-113).

But analysts differ quite heatedly over the utility of principal components as compared to common or principal factor analysis. For example, an entire special issue on this controversy was recently published in the 1992 volume of *Multivariate Behavioral Research*. The difference between the two approaches involves the entries used on the diagonal of the correlation matrix that is analyzed--principal components analysis uses ones on the diagonal while common factor analysis uses estimates of reliability, usually estimated through an iterative process.

The two methods yield increasingly more equivalent results as either (a) the factored variables are more reliable or (b) the number of variables being factored is increased. Snook and Gorsuch (1989, p. 149) explained this second point, noting that "As the number of variables decreases, the ratio of diagonal to off-diagonal elements also decreases, and therefore the value of the communality has an increasing effect on the analysis." For example, with 10 variables the 10 diagonal entries in the correlation matrix represent 10% (10 / 100) of the 100 entries in the matrix, but with 100 variables the diagonal entries represent only 1% (100 / 10,000) of the 10,000 matrix entries. Gorsuch

(1983) suggested that with 30 or more variables the differences between solutions from the two methods are likely to be small and lead to similar interpretations.

Anylsis #1: Score Reliability (v=59+8 and v=59)

We first computed classical, corrected, item discrimination (i.e., r's between scores on each item--potentially ranging from "1" to "7"--and scores on all the remaining items in each of the four scales--potentially ranging from "v" [v items x 1] to "v times 7") and scale alpha coefficients (cf. Thompson & Levitov, 1985). For each scale we conducted analyses both (a) for PPSDQ scale items and the 2 relevant continuous scores from the MBTI (e.g., the Extraversion and the Introversion scores from the EI scale) and (b) for only PPSDQ items. The first analysis uses MBTI scores to help delineate or "mark" the construct measured in a given analysis. These analyses are reported in Tables 1 through 8.

INSERT TABLES 1 THROUGH 8 ABOUT HERE.

Anylsis #2: Factor Structure (v=59+8 and v=59)

Next, we extracted four principal components from the inter-item correlation matrix and rotated these factors to the varimax criterion. In this initial factor analysis we used both scores on the 59 PPSDQ items *plus* continuous scores on each pair of scores for each of the four scales from the MBTI (i.e., MBTI scores on E, I, S, N, T, F, J, and P). Thus, this analysis involved 67 (59+8) items. Figure 1 presents the "scree" plot of the eigenvalues associated with the factors *prior to rotation* (Thompson, 1989).

Table 9 presents the factor pattern/structure matrix rotated to the varimax criterion. The items in the table are sorted into the four scales (i.e., SN, TF, EI, and JP) presumed to be measured by the PPSDQ.

INSERT FIGURE 1 AND TABLE 9 ABOUT HERE.

Figure 2 presents the "scree" plot for the related analysis involving only the 59 PPSDQ items. Table 10 presents the factor pattern/structure matrix rotated to the varimax criterion. Factor scores were also computed for each subject on each factor, for use in concurrent validity analyses.

INSERT FIGURE 2 AND TABLE 10 ABOUT HERE.

Analysis #3: Confirmatory Factor Analysis of Scale Scores (v=12)

Confirmatory analyses were also conducted using covariance structure analyses. The bivariate correlation matrix involving (a) the 8 MBTI scale scores and (b) the 4 summated scale scores computed by adding item responses on the items defining each PPDSQ scale was the basis for these LISREL analyses (Jöreskog & Sörbom, 1989).

The *a priori* model positing the existence of four correlated factors yielded a χ^2 of 424.00 (df = 48; noncentrality parameter = 424.00 - 48 = 376.00; 376.00/48 = 7.83). The LISREL goodness-of-fit index (GFI) was .76. The comprative baseline for the analysis was a null model positing 12 uncorrelated factors and no measurement error; this model yielded a χ^2 of 5,153.24 (df = 66;

noncentrality parameter = 5,153.24 - 66 = 5,087.24; 5,087.24/66 = 77.08). The LISREL goodness-of-fit index (GFI) for the null model was .24. The test of the theoretical model is reported in Table 11.

INSERT TABLE 11 ABOUT HERE.

Analysis #4: Concurrent Validity of Scale and Factor Scores

The last analysis involved computed concurrent validity coefficients on the 8 MBTI continuous scale scores, the 4 PPSDQ factor scores computed as part on Analysis #2, and the 4 PPSDQ summated scores computed by adding a subject's responses to all the items on a given scale. These analyses are reported in both Tables 12 and 13.

INSERT TABLES 12 AND 13 ABOUT HERE.

Discussion

As is always the case, no one study taken alone should be overinterpreted. As Neale and Liebert (1986, p. 290) observed:

> No one study, however shrewdly designed and carefully executed, can provide convincing support for a causal hypothesis or theoretical statement... Too many possible (if not plausible) confounds, limitations on generality, and alternative interpretations can be offered for any one observation. Moreover, each of the basic methods of research (experimental, correlational, and case

study) and techniques of comparison (within- or between-subjects) has intrinsic limitations. How, then, does social science theory advance through research? The answer is, by collecting a diverse body of evidence about any major theoretical proposition.

Nevertheless, some tentative conclusions can be offered, based on these results. First, as indicated in Table 1 through 8, it is possible to derive scores from the PPSDQ that have reasonable internal consistency. The most problematic of the four scales, from this perspective, is the JP scale.

Differential scale performance for JP is indicated by the remaining analyses as well. For example, in the exploratory factor analysis reported in Tables 9 and 10, the JP scale tended to merge with the SN scale. In the confirmatory factor analysis reported in Table 11, the JP and SN scales were most highly correlated (r = +.515; r^2 = 26.5%), while all the other pairs of factors had interfactor correlation coefficients ranging at the extremes from |.086| to |.262| (i.e., r^2 values ranging from 0.7% to 6.95%). And in the Pearson r and Spearman rho matrices presented in Tables 12 and 13, although PPSDQ Judging-Perceiving scores were highly correlated with MBTI J and P continuous scores (e.g., r = -.6951 and r +.6911, respectively), PPSDQ Judging-Perceiving scores were also highly correlated with MBTI J and P continuous scores (e.g., r = -.4165 and r +.4250, respectively).

It may be that more adjective self-description semantic-

differential items are needed to measure the JP scale. However, taken together with previous results (Thompson & Stone, 1994), these results may alternatively suggest that the JP scale is harder to measure using semantic differential items. Items consisting of complete sentences may be needed to elaborate this construct. These alternatives remain to be explored in future research.

In summary, results in the present study were generally favorable regarding at least three of the four constructs presumed to be measured by the PPSDQ. Additional items need to be formulated to tap the fourth (JP) dimension. Further research using the original PPSDQ items together with additional items would allow both replication of present and previous results, as well as exploration of improvements resulting from use of an additional set of JP items.

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Table 1
Classical Reliability Statistics for
Extraversion-Introversion Scale (n=420, v=17)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
MIXERLON	46.1747	602.3110	.7376	.8388
SOCPRIVA	45.7057	598.6838	.7113	.8383
XINTREXT	45.7700	602.3286	.6953	.8393
XSILENGA	45.4083	608.2712	.6415	.8412
PERSNSHY	46.2319	601.0915	.6718	.8393
XQUIETEX	46.2366	608.0975	.6315	.8413
GREGARTI	45.8092	622.8944	.5176	.8455
CONGRECL	46.1057	623.6358	.5205	.8456
FRIEDIST	47.0975	625.2314	.4981	.8462
XSOLIAMI	46.0742	624.5341	.5146	.8459
EXUBSERE	45.2342	625.1357	.4413	.8469
XSTILLAN	46.2700	628.3960	.4230	.8476
XREFLECA	45.7019	627.8653	.3541	.8488
APPROACH	45.9057	631.3995	.2974	.8503
XTERSEWO	45.5754	645.2465	.1773	.8534
XEXTRAVE	*63.4676*	*381.2318*	*.8843*	*.8276*
INTROVER	*36.1223*	*372.0286*	*.8573*	*.8379*

α = 0.8516

Note. MBTI continuous variables are *italicized*.

Table 2
Classical Reliability Statistics for
Extraversion-Introversion Scale (n=420, v=15)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
MIXERLON	47.1533	154.6882	.7298	.8547
SOCPRIVA	46.6842	153.3749	.6867	.8562
XINTREXT	46.7485	154.6072	.6871	.8564
XSILENGA	46.3869	157.8355	.6263	.8597
PERSNSHY	47.2104	152.4019	.7025	.8552
XQUIETEX	47.2152	157.3937	.6251	.8597
GREGARTI	46.7878	165.1652	.5064	.8656
CONGRECL	47.0842	164.1198	.5543	.8637
FRIEDIST	48.0761	165.3362	.5192	.8652
XSOLIAMI	47.0527	164.6010	.5485	.8640
EXUBSERE	46.2128	165.7207	.4427	.8685
XSTILLAN	47.2485	167.2928	.4297	.8689
XREFLECA	46.6804	168.2260	.3215	.8751
APPROACH	46.8842	168.0372	.3104	.8761
XTERSEWO	46.5539	176.3760	.1706	.8798

α = 0.8727

Table 3
Classical Reliability Statistics for
Sensing-Intuition Scale (n=420, v=16)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
TRADCREA	56.3901	487.2768	.5016	.7882
PRECIMAG	56.5491	484.4952	.5474	.7865
XINVENOR	56.9277	485.3414	.5483	.7867
PLANVISI	56.5563	490.3602	.5197	.7888
CONCLEXP	56.1444	497.7096	.4446	.7923
XINSIGHT	56.4848	490.2759	.4843	.7894
XDIVERCO	56.5405	490.5354	.4695	.7898
REALINTU	57.5214	494.9152	.3872	.7927
XDIVERPR	56.7410	489.9822	.4851	.7893
XCONCEPR	57.7958	500.9453	.3385	.7951
DIRECTIN	56.7720	500.9396	.3881	.7941
PRACTHEO	57.8269	503.1276	.3143	.7961
XVARIREP	55.8944	502.4458	.3549	.7950
XINQUICR	56.4705	504.3441	.2959	.7967
XSENSING	*73.8086*	*259.4891*	*.8153*	*.7811*
INTUITIO	*49.2063*	*314.6216*	*.7908*	*.7536*

α = 0.8001

Note. MBTI continuous variables are *italicized*.

Table 4
Classical Reliability Statistics for
Sensing-Intuition Scale (n=420, v=14)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
TRADCREA	57.0544	115.6057	.4639	.8070
PRECIMAG	57.2134	112.3761	.5704	.7986
XINVENOR	57.5920	112.2504	.5901	.7973
PLANVISI	57.2205	115.1862	.5500	.8010
CONCLEXP	56.8086	119.9100	.4377	.8091
XINSIGHT	57.1491	114.7054	.5225	.8026
XDIVERCO	57.2048	113.8563	.5362	.8014
REALINTU	58.1857	119.3624	.3454	.8163
XDIVERPR	57.4052	112.7259	.5822	.7980
XCONCEPR	58.4601	123.7873	.2527	.8219
DIRECTIN	57.4363	120.8139	.4039	.8113
PRACTHEO	58.4911	124.9905	.2241	.8235
XVARIREP	56.5586	120.5781	.4027	.8113
XINQUICR	57.1348	120.6542	.3624	.8142

α = 0.8196

Table 5
Classical Reliability Statistics for
Thinking-Feeling Scale (n=420, v=23)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
FACTCOMP	90.8783	647.3906	.6542	.8262
XTENDERR	91.3079	651.8917	.5602	.8281
XFEELTHI	91.3351	648.7238	.5286	.8280
XKINDANA	90.8899	651.8594	.5366	.8284
STRICTFO	90.5608	659.8229	.4988	.8301
DISPASEM	90.3090	660.3387	.4928	.8303
SKEPTRUS	91.2304	653.7754	.4711	.8296
XEMPATHL	92.1162	659.0428	.4306	.8310
LOGICHUM	91.4018	658.5109	.4477	.8306
XLIGHTHE	90.8470	662.4211	.4403	.8313
XGULLSUS	92.3113	667.0988	.3877	.8326
XCARICOO	90.3985	665.2417	.3931	.8323
XACCEPDI	90.6590	662.8569	.4146	.8317
XRECEPTS	91.5375	666.1008	.3584	.8330
EVALNONJ	91.6899	665.5734	.3591	.8329
XSYMPATH	92.0351	671.7724	.2668	.8353
JUSTHARM	91.7113	669.8833	.2852	.8348
EVALOPEN	91.0804	670.5456	.2949	.8346
PRINCIPL	91.2182	668.4790	.2945	.8345
IMPERPER	90.2280	676.7697	.2947	.8350
XSENSUAL	90.9904	678.9460	.2036	.8369
XTHINKIN	*106.5970*	*386.8658*	*.8239*	*.8337*
FEELING	*85.5209*	*487.3821*	*.7781*	*.8094*

α = 0.8373

Note. MBTI continuous variables are *italicized*.

Table 6
Classical Reliability Statistics for
Thinking-Feeling Scale (n=420, v=21)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
FACTCOMP	91.4640	218.5737	.6521	.8178
XTENDERR	91.8936	222.1404	.5326	.8226
XFEELTHI	91.9209	221.1924	.4811	.8245
XKINDANA	91.4756	220.8364	.5372	.8221
STRICTFO	91.1465	225.5817	.4999	.8244
DISPASEM	90.8947	226.3701	.4817	.8252
SKEPTRUS	91.8161	221.7894	.4713	.8250
XEMPATHL	92.7019	227.1178	.3835	.8292
LOGICHUM	91.9875	225.6744	.4252	.8272
XLIGHTHE	91.4328	226.4460	.4546	.8261
XGULLSUS	92.8970	231.0177	.3584	.8301
XCARICOO	90.9843	228.7260	.3911	.8288
XACCEPDI	91.2447	226.2817	.4361	.8268
XRECEPTS	92.1232	229.1622	.3557	.8304
EVALNONJ	92.2756	228.1742	.3705	.8297
XSYMPATH	92.6209	235.8533	.1935	.8381
JUSTHARM	92.2970	231.1845	.2830	.8341
EVALOPEN	91.6661	230.5495	.3163	.8322
PRINCIPL	91.8040	228.5244	.3279	.8320
IMPERPER	90.8137	233.9129	.3391	.8309
XSENSUAL	91.5761	235.3526	.2292	.8358

$\alpha = 0.8352$

Table 7
Classical Reliability Statistics for
Judging-Perceiving Scale (n=420, v=11)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
XFLEXORG	35.6095	452.6252	.5669	.7689
PROMPTFR	35.3557	449.2314	.5830	.7671
XRANDSEQ	35.7795	456.0741	.5535	.7708
TIMELYRE	35.3581	454.8683	.5342	.7706
XIMPETTA	36.1057	466.6009	.4686	.7769
XIMPULDE	35.5890	465.1584	.4257	.7772
RESPADAP	36.3010	464.2617	.3718	.7784
DECICURI	35.0867	477.7416	.2469	.7856
XCAREFRE	35.4152	463.5515	.4247	.7766
XJUDGING	*52.1652*	*236.9432*	*.8948*	*.7022*
PERCEIVI	*25.3152*	*223.1693*	*.8861*	*.7167*

α = 0.7848

Note. MBTI continuous variables are *italicized*.

Table 8
Classical Reliability Statistics for
Judging-Perceiving Scale (n=420, v=9)

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
XFLEXORG	33.4738	61.9062	.4710	.7502
PROMPTFR	33.2200	58.6314	.5701	.7341
XRANDSEQ	33.6438	60.9403	.5552	.7380
TIMELYRE	33.2224	60.5984	.5251	.7418
XIMPETTA	33.9700	65.2885	.4560	.7535
XIMPULDE	33.4533	63.7961	.4429	.7544
RESPADAP	34.1652	63.7136	.3606	.7682
DECICURI	32.9510	67.8656	.2873	.7751
XCAREFRE	33.2795	62.9391	.4471	.7538

α = 0.7739

Table 9
Principal Components Analysis
of 59 PPSDQ Variables and 8 MBTI Continuous Scale Scores
(n = 420, v = 67)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
MIXERLON	.09798	.76580	.12198	.17371
SOCPRIVA	.16185	.72669	.10241	.16708
INTREXTR	-.14694	-.73497	-.04102	-.08167
SILENGAB	.00604	-.69603	.01098	.08756
PERSNSHY	.06954	.76130	.07283	.01396
QUIETEXP	-.14331	-.71356	.02916	.15914
GREGARTI	.11608	.61047	-.08241	-.14468
CONGRECL	.04493	.58131	.22576	.04900
FRIEDIST	.00598	.54446	.33912	.24408
SOLIAMIC	-.01635	-.57541	-.16895	-.11101
EXUBSERE	.01839	.52256	-.07160	-.16903
STILLANI	-.25138	-.46612	-.10626	.22697
REFLECAC	-.07017	-.39998	.11672	-.30092
APPROACH	-.14874	.33052	.25744	.20265
TERSEWOR	.04411	-.20887	-.16069	.23533
EXTRAVER	*-.08734*	*-.83588*	*-.07625*	*-.05765*
INTROVER	*.07975*	*.82202*	*.03115*	*.04266*
TRADCREA	-.39114	-.20472	-.07130	.27441
PRECIMAG	-.50480	-.07402	-.26647	.28183
INVENORG	.65163	.07157	.06847	-.22385
PLANVISI	-.52907	-.10889	-.12582	.28745
CONCLEXP	-.46539	-.09282	-.09253	.17697
INSIGHTS	.46938	.12253	.19690	-.26435
DIVERCON	.53006	.22126	.13397	-.10605
REALINTU	-.24074	.00661	-.26714	.40846
DIVERPRE	.53842	.21103	.17220	-.17612
CONCEPRE	.20290	-.17531	-.02025	-.49527
DIRECTIN	-.32901	-.18801	-.06996	.28574
PRACTHEO	-.22529	.08879	.07723	.42507
VARIREPI	.40447	.25618	.09087	-.01536
INQUICRI	.30967	.13532	.32427	.00304
SENSING	*.56729*	*.07476*	*.13743*	*-.52622*
INTUITIO	*-.55627*	*-.01079*	*-.14620*	*.50692*
FACTCOMP	-.15102	-.10653	-.68636	.14986
TENDERRA	.13695	.00378	.61299	-.13407
FEELTHIN	.01319	.14784	.58127	-.02405
KINDANAL	.02772	.09428	.60442	.28266
STRICTFO	-.25264	-.07131	-.51267	-.18560
DISPASEM	.07436	-.18164	-.56144	.18529
SKEPTRUS	-.13781	-.06767	-.50433	-.32860
EMPATHLO	.10078	-.09251	.49878	-.24188
LOGICHUM	-.18645	.01949	-.47804	.14341
LIGHTHEA	.31251	.13241	.42186	.07547
GULLSUSP	.02779	-.06599	.46025	.11366
CARICOOL	-.09240	.19384	.49958	-.05781
ACCEPDIS	.16384	.17598	.42736	.30983
RECEPTSE	.16269	.15654	.38515	.04387
EVALNONJ	-.31397	.05331	-.38097	-.14301
SYMPATHY	-.05152	-.05087	.34039	-.10590
JUSTHARM	-.17067	.07609	-.33016	-.03317

EVALOPEN	-.24782	-.17206	-.27107	-.16789
PRINCIPL	-.15305	-.20917	-.29774	-.19792
IMPERPER	.04478	-.24421	-.37489	.08658
SENSUALI	.09831	.10012	.23970	-.07497
THINKING	*.12048*	*-.02762*	*.83890*	*-.04635*
FEELING	*-.09248*	*.05752*	*-.78199*	*.10323*
FLEXORGA	.63006	.01380	.01942	.06299
PROMPTFR	-.66313	-.13301	-.05397	-.02819
RANDSEQU	.62748	.01717	.07887	.02455
TIMELYRE	-.61195	-.01230	-.09535	-.22273
IMPETTAS	.51962	-.01700	.06819	-.09822
IMPULDEL	.48408	.11276	.10313	.05960
RESPADAP	-.44436	.12569	.07557	.10697
DECICURI	-.27679	.03029	-.20847	.09560
CAREFREE	.54022	.04760	.32774	.29978
JUDGING	*.82719*	*.00185*	*.01155*	*.01741*
PERCEIVI	*-.81741*	*-.00522*	*-.00480*	*.00511*

Note. MBTI continuous variables are *italicized*.

Table 10
Principal Components Analysis
of 59 PPSDQ Variables
(n = 420, v = 59)

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
MIXERLON	-.07032	.75540	.21454	.02571
SOCPRIVA	-.11309	.71574	.22049	-.01138
INTREXTR	.13523	-.72812	-.14890	.05664
SILENGAB	.04450	-.68949	.10593	-.08007
PERSNSHY	-.07752	.76974	.06533	.09001
QUIETEXP	.20472	-.70916	.06775	-.01313
GREGARTI	-.17550	.61145	-.13132	.01986
CONGRECL	-.02234	.59453	.18430	.17331
FRIEDIST	.07018	.55307	.36338	.20952
SOLIAMIC	-.03486	-.58697	-.22764	-.07342
EXUBSERE	-.06263	.53461	-.19884	.08578
STILLANI	.32589	-.45540	-.01672	-.09848
REFLECAC	-.02597	-.41319	-.18822	.29224
APPROACH	.22028	.34494	.25565	.15171
TERSEWOR	.04993	-.19459	.11536	-.28967
TRADCREA	.47390	-.19045	-.03606	-.05335
PRECIMAG	.58705	-.04192	-.09918	-.26782
INVENORG	-.69738	.05556	.00547	.09530
PLANVISI	.61890	-.08268	-.02538	-.12046
CONCLEXP	.51901	-.07102	-.08584	-.05203
INSIGHTS	-.54221	.11418	.01032	.27842
DIVERCON	-.55267	.20764	.13174	.10447
REALINTU	.37666	.05136	.01926	-.31183
DIVERPRE	-.58661	.20629	.06512	.19925
CONCEPRE	-.35126	-.20992	-.27520	.14425
DIRECTIN	.43930	-.18020	.05075	-.09956
PRACTHEO	.34682	.12544	.24447	-.04115
VARIREPI	-.40211	.27768	.14916	.03531
INQUICRI	-.30391	.13571	.25019	.24203
FACTCOMP	.20836	-.07409	-.34457	-.59425
TENDERRA	-.20865	-.02944	.25565	.57298
FEELTHIN	-.02052	.12887	.25461	.54564
KINDANAL	.06427	.08187	.55299	.36125
STRICTFO	.17033	-.06206	-.58296	-.18935
DISPASEM	.00494	-.14713	-.16164	-.59188
SKEPTRUS	.00068	-.05327	-.64388	-.14395
EMPATHLO	-.18588	-.12515	.10099	.55310
LOGICHUM	.23452	.05007	-.22230	-.42708
LIGHTHEA	-.28174	.11178	.36008	.27610
GULLSUSP	.03623	-.09735	.39808	.28084
CARICOOL	.07377	.20000	.22319	.48937
ACCEPDIS	-.04556	.17572	.55561	.12681
RECEPTSE	-.12008	.14157	.34956	.23021
EVALNONJ	.25341	.07324	-.52419	-.06660
SYMPATHY	.02470	-.05004	.01116	.42314
JUSTHARM	.14046	.10733	-.33184	-.16843
EVALOPEN	.18093	-.14378	-.40647	-.03346
PRINCIPL	.08730	-.20291	-.40177	-.07707
IMPERPER	-.00059	-.22780	-.14129	-.41645
SENSUALI	-.13708	.06940	.02618	.34332

FLEXORGA	-.56157	.01137	.15353	-.04255
PROMPTFR	.62710	-.12000	-.20690	.09418
RANDSEQU	-.59109	.00427	.17845	-.02074
TIMELYRE	.49096	-.01408	-.39844	.19470
IMPETTAS	-.52884	-.03366	.04728	.04724
IMPULDEL	-.46839	.11088	.15586	.02414
RESPADAP	.46962	.14913	-.01687	.14737
DECICURI	.30133	.04129	-.12709	-.16114
CAREFREE	-.41680	.03308	.57972	-.01717

Table 11
LISREL Maximum-Likelihood Confirmatory Factor Analysis
of 8 MBTI Continuous Scores and 4 PPSDQ Summated Scale Scores
(n=420, v=12)

LAMBDA X	EXTRINTR	SENSINTU	THINFEEL	JUDGPERC	Theta Delta
FINTREXT	0.782	0.000	0.000	0.000	0.389
EXTRAVER	*-0.990*	*0.000*	*0.000*	*0.000*	*0.021*
INTROVER	*0.955*	*0.000*	*0.000*	*0.000*	*0.088*
FSENSINT	0.000	0.680	0.000	0.000	0.538
SENSING	*0.000*	*-0.962*	*0.000*	*0.000*	*0.075*
INTUITIO	*0.000*	*0.929*	*0.000*	*0.000*	*0.138*
FTHINFEE	0.000	0.000	0.746	0.000	0.443
THINKING	*0.000*	*0.000*	*-0.982*	*0.000*	*0.036*
FEELING	*0.000*	*0.000*	*0.894*	*0.000*	*0.201*
FJUDGPER	0.000	0.000	0.000	0.707	0.500
JUDGING	*0.000*	*0.000*	*0.000*	*-0.984*	*0.031*
PERCEIVI	*0.000*	*0.000*	*0.000*	*0.980*	*0.040*

PHI	EXTRINTR	SENSINTU	THINFEEL	JUDGPERC
EXTRINTR	1.000			
SENSINTU	-0.086	1.000		
THINFEEL	-0.106	0.262	1.000	
JUDGPERC	-0.117	0.515	0.172	1.000

Note. MBTI continuous variables are *italicized*.

Table 12
Pearson r Coefficients for 8 MBTI Continuous Scale Scores with PPDSQ Summated Scale and Factor Scores (n = 420)

	EXTRAVER	INTROVER	SENSING	INTUITIO	THINKING	FEELING	JUDGING	PERCEIVI	FINTREXT	FSENSINT	FTHINFEE	FJUDGPER	FSCORE1	FSCORE2	FSCORE3	FSCORE4
EXTRAVER	1.0000															
INTROVER	-.9449**	1.0000														
SENSING	-.0843	.0894	1.0000													
INTUITIO	.0503	-.0161	-.8955**	1.0000												
THINKING	-.0954	.0770	.2426**	-.2187**	1.0000											
FEELING	.1011*	-.0480	-.2165**	.2280**	-.8778**	1.0000										
JUDGING	-.1076*	.0933	.4653**	-.4711**	.1624**	-.1658**	1.0000									
PERCEIVI	.1262**	-.0872	-.4537**	.4868**	-.1423**	.1847**	-.9647**	1.0000								
FINTREXT	-.7730**	.7475**	.1249*	-.0791	.1085*	-.0751	.1102*	-.1134*	1.0000							
FSENSINT	.1646**	-.1602**	-.6553**	.6054**	-.2653**	.2154**	-.5326**	.5292**	-.2530**	1.0000						
FTHINFEE	.2320**	-.1881**	-.2327**	.2340**	-.7325**	.6584**	-.2052**	.1947**	-.2997**	.3854**	1.0000					
FJUDGPER	.1435**	-.1335**	-.4165**	.4250**	-.2463**	.2307**	-.6951**	.6911**	-.1631**	.6264**	.3664**	1.0000				
FSCORE1	.0828	-.0886	-.6140**	.5831**	-.1260**	.1114*	-.6700**	.6677**	-.1004*	.8897**	.2055**	.8307**	1.0000			
FSCORE2	-.7520**	.7324**	.0530	.0066	-.0466	.0743	.0149	-.0171	.9637**	-.1508**	-.1218*	-.0130	.0000	1.0000		
FSCORE3	-.1068*	.0703	-.0155	.0074	.4777**	-.3689**	.1700**	-.1424**	.1422**	-.0348	-.6767**	-.3503**	.0000	.0000	1.0000	
FSCORE4	-.0454	.0140	.1476**	-.1614**	.5677**	-.5683**	-.0763	.0648	.0958*	-.2725**	-.6720**	.0626	.0000	.0000	.0000	1.0000

Note. Selected coefficients bearing upon concurrent validity have been underlined. PPSDQ summated scale scores are named "FINTREXT" to "FJUDGPER".

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Table 13
Spearman rho Coefficients for 8 MBTI Continuous Scale Scores with PPDSQ Summated Scale and Factor Scores (n = 420)

	EXTRAVER	INTROVER	SENSING	INTUITIO	THINKING	FEELING	JUDGING	PERCEIVI	FINTREXT	FSENSINT	FTHINFEE	FJUDGPER	FSCORE1	FSCORE2	FSCORE3
INTROVER	-.9407														
SENSING	-.0783	.0830													
INTUITIO	.0477	-.0151	-.9078												
THINKING	-.0901	.0656	.2505	-.2140											
FEELING	.0980	-.0404	-.2223	.2208	-.8880										
JUDGING	-.1009	.0825	.4635	-.4602	.1637	-.1657									
PERCEIVI	.1268	-.0851	-.4501	.4734	-.1458	.1830	-.9658								
FINTREXT	-.7720	.7411	.1137	-.0698	.1170	-.0824	.1029	-.1126							
FSENSINT	.1772	-.1720	-.6555	.6000	-.2659	.2267	-.5235	.5200	-.2768						
FTHINFEE	.2251	-.1747	-.2293	.2272	-.6908	.6306	-.2214	.2164	-.3075	.4070					
FJUDGPER	.1331	-.1281	-.4160	.4197	-.2303	.2355	-.6990	.6988	-.1426	.6052	.3738				
FSCORE1	.1071	-.1119	-.6178	.5840	-.1492	.1468	-.6810	.6800	-.1221	.8721	.2527	.8297			
FSCORE2	-.7545	.7315	.0483	.0035	-.0265	.0581	.0196	-.0289	.9623	-.1725	-.1455	-.0058	-.0208		
FSCORE3	-.1167	.0728	.0032	-.0266	.4594	-.3773	.1771	-.1626	.1614	-.1024	-.6712	-.3697	-.0782	.0293	
FSCORE4	-.0392	.0015	.1687	-.1682	.5476	-.5570	-.0472	.0435	.1078	-.2880	-.6546	.0210	-.0353	.0153	.0369

Note. Selected coefficients bearing upon concurrent validity have been underlined. PPSDQ summated scale scores are named "FINTREXT" to "FJUDGPER".

Figure 1
"Scree" Plot for R-technique Factor Analysis
of 59 PPSDQ Variables and 8 MBTI Continuous Scale Scores
(n = 420)

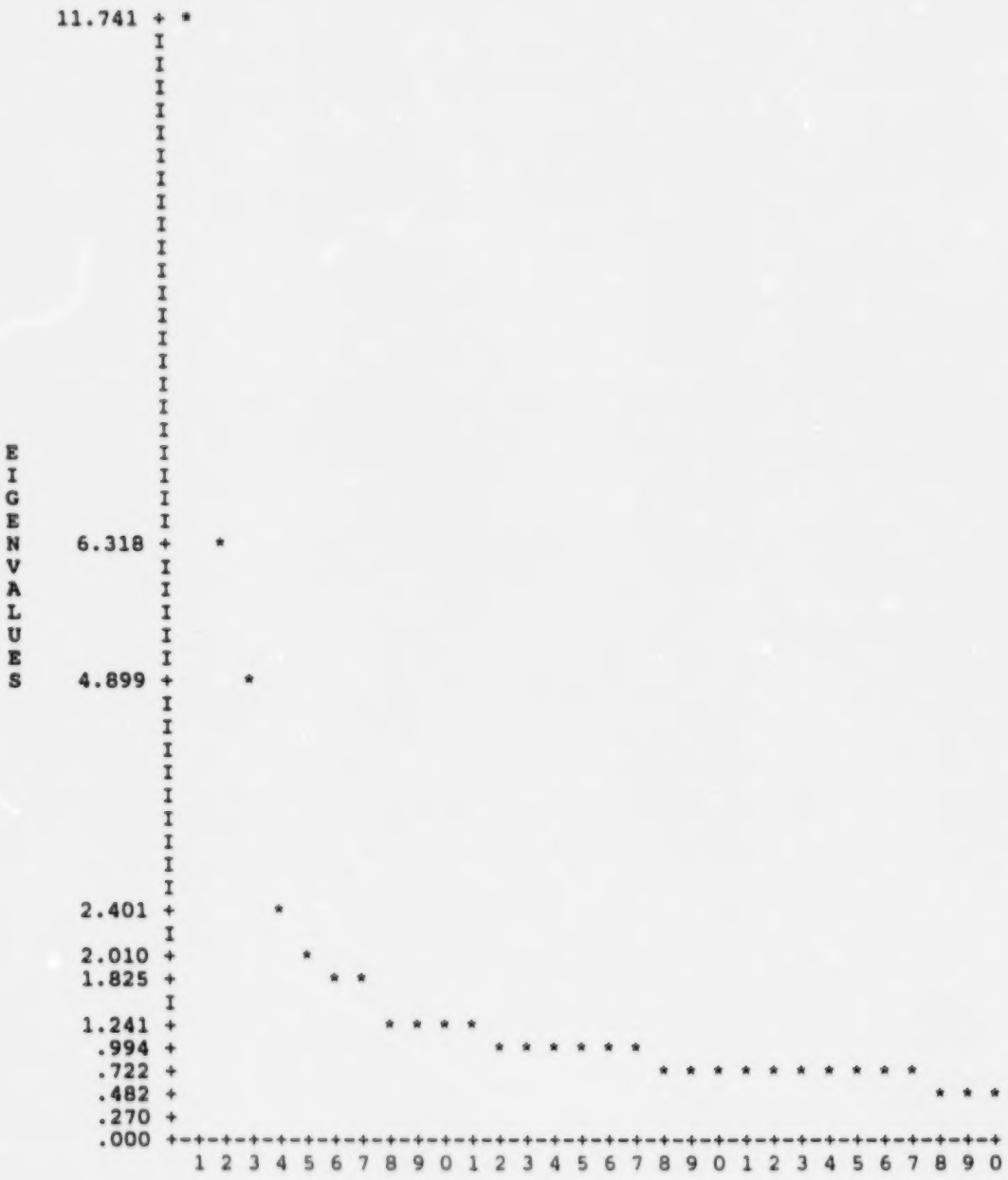

Figure 2
"Scree" Plot for R-technique Factor Analysis
of 59 PPSDQ Variables
(n = 420)

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Appendix A
Descriptive Statistics
for 8 MBTI Continuous Scores and 4 PPSDQ Summated Scale Scores
(n=420, v=12)

VARIABLE	MEAN	ST. DEV.	SKEWNESS	KURTOSIS	MINIMUM	FREQ.	MAXIMUM	FREQ.
FINTREXT	50.284	13.590	0.229	-0.252	16.000	1	88.000	1
EXTRAVER	*14.162*	*6.749*	*-0.177*	*-0.934*	*0.000*	*1*	*27.000*	*5*
INTROVER	*13.183*	*7.155*	*0.247*	*-0.919*	*0.000*	*5*	*29.000*	*1*
FSENSINT	61.840	11.600	0.040	0.032	32.000	2	98.000	1
SENSING	*12.633*	*7.821*	*0.450*	*-0.546*	*0.000*	*9*	*34.000*	*1*
INTUITIO	*11.969*	*6.178*	*0.115*	*-0.969*	*0.000*	*4*	*25.000*	*4*
FTHINFEE	96.352	15.767	-0.423	0.469	44.000	1	141.000	1
THINKING	*10.831*	*7.742*	*0.604*	*-0.466*	*0.000*	*16*	*33.000*	*1*
FEELING	*10.245*	*5.304*	*-0.084*	*-0.940*	*0.000*	*10*	*21.000*	*1*
FJUDGPER	37.672	8.796	-0.078	-0.248	12.000	1	61.000	2
JUDGING	*12.357*	*7.421*	*0.145*	*-0.919*	*0.000*	*16*	*28.000*	*4*
PERCEIVI	*14.493*	*7.940*	*0.084*	*-0.921*	*0.000*	*11*	*30.000*	*4*

Note. MBTI continuous variables are *italicized*.